XL. *A new* Trocart *for the Puncture in the* Hydrocephalus, *and for other Evacuations, which are neceſſary to be made at different Times; by M.* le Cat, *F. R. S. Tranſlated from the* French *by* Tho. Stack, *M. D. F. R. S.*

Read Oct. 31. 1751. ON the 15 of October, 1744, Peter Michel, an infant of three months and a half old, ſon of a weaver, of the ſuburb of St. Sever of Rouen, was brought to me, having his head, for five weeks paſt only, as big as it appears in Fig. 1. All the ſutures of the ſcull were conſiderably ſeparated, aſunder; the exterior veins of the head very much ſwoln, and the eyes turned downward. This infant was pretty plump, and had had no diſtemper before this accident; but from the time it appear'd, he became very froward, far from being dull or lethargic, as ſome authors ſay.

A hydrocephalus of ſo enormous a ſize, and ſo ſpeedily formed, appear'd to me incurable by medicines in ſo young an infant; and entertaining no greater hopes from the operation, I exhorted the parents to patience. They came again to me, and earneſtly intreated me, ſaying, that their child could not poſſibly hold out long againſt a diſtemper, which gain'd ground ſo very faſt. They took the event on themſelves, and by force of intreaties made me reſolve on the operation.

I ſuſpected, that the cauſe of the deaths (and ſudden too for the moſt part) of thoſe, who had been

punctured for the hydrocephalus, might probably be, that all the water had been drawn off at once; and that the brain had been left, as it were, uncover'd, and expoſed to the impreſſions of the air, which muſt neceſſarily fill the wide ſpace, that had been occupied by the water; ſince, in this caſe, the integuments could not be preſſed cloſe on the contained parts, as it happens to the integuments of the *abdomen* after the puncture in the *aſcites*. Wherefore, ſince I was prevailed on to make the puncture, I reſolved to draw the water by little and little, at different times diſtant from each other; and in the intervals of theſe evacuations to compreſs the integuments with a proper bandage, to make them come near the brain.

The common trocarts did not ſeem proper to fulfil theſe views. I was of opinion, that punctures often repeated in theſe nervous parts were dangerous: beſides, as the integuments of the head were thin, and upon the ſtretch, the opening being once made would never cloſe ſufficiently to ſtop the evacuation, when the *canula* was removed; and if I left the *canula* in the orifice, and ſtopp'd it with a ſtopple, this ſame diſpoſition of the integuments would ſuffer the water to ouze out between them and the ſides of the *canula*: thus would the evacuation become total, in ſpite of me, whatever method I uſed with the trocarts already known. Theſe reflections made me contrive the following inſtrument.

It is a new trocart, repreſented by Fig. 2. and which has this peculiarity, that the *canula* is much ſhorter than ordinary. This *canula* is repreſented ſeparate in Fig. 3.: but there ought to be ſeveral,

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of different lengths for different caſes. On the upper part of this *canula* there are two circles, each one of which is faſten'd to a different piece. Theſe pieces are exhibited ſeparate in Fig. 4. and they are made ſo as to be ſcrew'd one on the other. Theſe circles are ſomewhat concave in their ſurfaces, which correſpond reciprocally; ſo that their circumferences touch, while there is a tolerable vacuity towards their centre. By means of this ſimple mechaniſm, I apply the plaſter *x*, with a hole in it, on the lower circle *A*, whoſe ſcrew paſſes into the hole of the plaiſter: this done, I ſcrew the upper piece *B* on the lower *A*, and I ſqueeze the plaiſter tight between theſe two circles. The inſtrument becomes then as in Fig. 5. The plaiſter, which I have choſen, is that of Andreas a Cruce; but one may uſe Burgundy-pitch, or any other powerful emplaſtic, at pleaſure. My plaiſter was three inches broad. To the upper end of the *canula* I adapted a very exact ſilver ſtopple *c*, Fig. 3. The part, where I intended to make the puncture, was ſhaved, wider than the plaiſter.

Thus having prepared every thing, and the *canula* being armed with its trocart, and fortified with the plaiſter, as it appears Fig. 5. I performed the puncture on Friday the 23 of October 1744, by thruſting in the trocart and *canula* up to the circles and plaiſter, which I applied and made to ſtick in all its parts on the head, by preſſing it with my hand and fingers made very warm, and alſo with hot linen-cloths. When the plaiſter was thoroughly well faſten'd on, I pull'd out the trocart, and drew four or five ounces of ſeroſity, of a browniſh white, or the

the colour of pale white-wine, and ſomewhat foul: after which I cloſed the *canula* with its ſtopple *c*.

By chemical experiments, this liquor was found to be neither acid nor alcaline: being put on the fire, it evaporated quite away, and left at bottom a frothy neutro-ſaline ſediment.

Saturday, Oct. 24, I unſtopp'd the *canula*, and drew the ſame quantity of water. The infant was ill on the Sunday: wherefore I did not diſturb him that day. Monday the 26 he was better. I drew five more ounces of water. Tueſday I ſuffer'd him to take reſt. Every time that I made this evacuation, I bound the head with a ſtrong capeline *. Notwithſtanding theſe precautions, the infant died in the night between Tueſday and Wedneſday; and it will preſently appear, that this hydrocephalus was of an incurable ſort. I open'd it, and found the brain applied againſt the *dura mater* as uſual; but this brain was thin, and as it were ſpread out: it only formed a kind of thin ſack fill'd with water. I open'd, and ſaw that the diſeaſe was nothing more than an exceſſive dilatation of the two lateral ventricles, by the waters collected therein. The *glandula pinealis* was almoſt waſted, as well as the *plexus choroides*, of which ſome few veſtiges only remain'd. On the contrary, the other veſſels, which lined the inſide of this ſack, were very viſible.

As the brain is a ſoft *viſcus* without elaſticity, it manifeſtly appears, that it could not poſſibly reſume its natural form, how ſlowly ſoever I had evacuated the

* A bandage peculiar to the head.

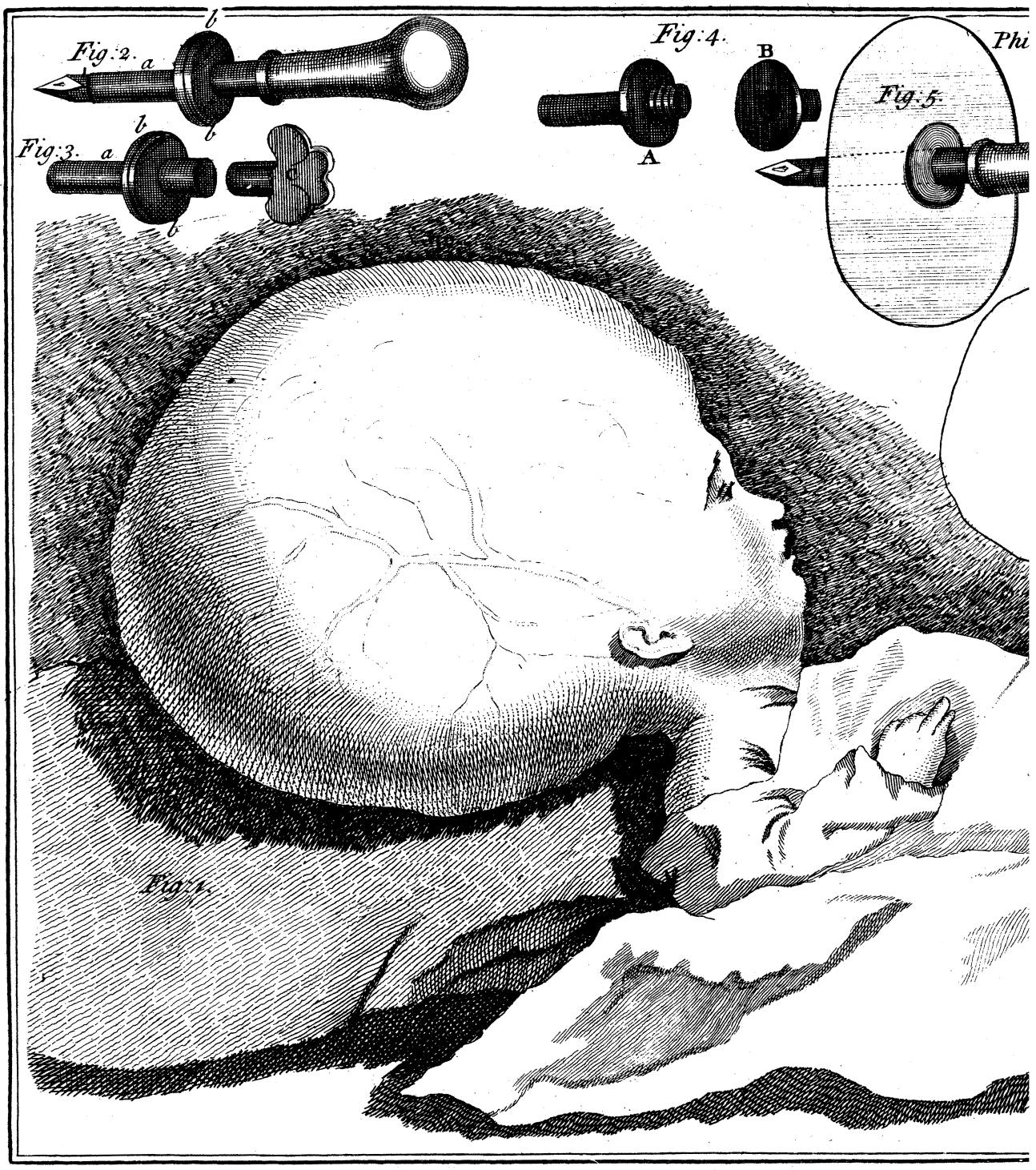
the waters: but perhaps the operation would have ſucceeded, if the ſeat of the dropſy had been on the outſide of the brain. However that be, this trocart to me ſeems uſeful for ſeveral operations: and this is my firſt motive for preſenting it to the Royal Society. My ſecond motive for ſo doing is, the conſequences, which may be deduced from this obſervation with regard to the apoplexy.

How can one believe, that the apoplexy is cauſed by the extravaſation of the liquids, or by the fullneſs of the veſſels, after having ſeen a brain filled with water, and diſtended ſo vaſtly as this was, without any one apoplectic ſymptom? Verduc, who in his pathology propoſes an objection ſimilar to this againſt his own ſyſtem, endeavours to ſolve it, but has not ſucceeded. The objection remains victorious.

Nevertheleſs, when the brain of a perſon dead of an apoplexy is open'd, and extravaſated blood is found in it, his death is imputed to this extravaſation alone, and the apoplexy is pronounced ſanguineous. This has happened on the death of M. De Frequienne, preſident of our parliament. On opening him I found about a tea-ſpoon full of blood extravaſated within the *medulla oblongata*, between the third and fourth ventricle, at the beginning of the latter. Could ſo ſmall a quantity of blood preſs on the principles of the nerves ſo as totally to intercept the courſe of the ſpirits? No, certainly; for this would be miſtaking the effect for the cauſe. This extravaſated blood was but an accident owing to the convulſive motions of the *dura mater*, and of the veſſels of the whole baſis of the ſcull, ſeized with the apoplectic diſorder, which moſt commonly is nothing

nothing elſe but the matter of the gout or rheumatiſm fixing on this ſource of the nerves. Now this general attack, which ſwells and diſtends the *dura mater* throughout this whole baſis, makes the blood ſtagnate in the veſſels, ſome of the weakeſt of which burſt, and at the ſame time cloſes all the canals of the nerves, and conſequently kills the patient. Unleſs a perſon would chuſe to ſay, that thoſe broken canals were thoſe, which concurred in the ſubſtance of the brain to the formation of the ſpirits, that give motion to the heart: which opinion is not free from difficulties; ſince it is well known, that this organ recieves the influences of ſeveral nerves at a time, all which ought to bear their part in this accident, which, after all, is but the rupture of a ſimple capillary veſſel.

The drift of theſe reflections is to engage practitioners to have ſomewhat leſs confidence in their theories, and, for example, not to make a poor apoplectic patient die under the lancet; a thing, which I have ſeen ſeveral times, from the notion which they hold, that it is the over-great quantity of blood, that kills: for, beſides that this falſe opinion is fatal to this patient in particular, it will ſtill be ſo to all future apoplectics, if the prejudice in favour of this theory be ſuch as to prevent ſeeking the true cauſes, and the real remedies of the apoplexy.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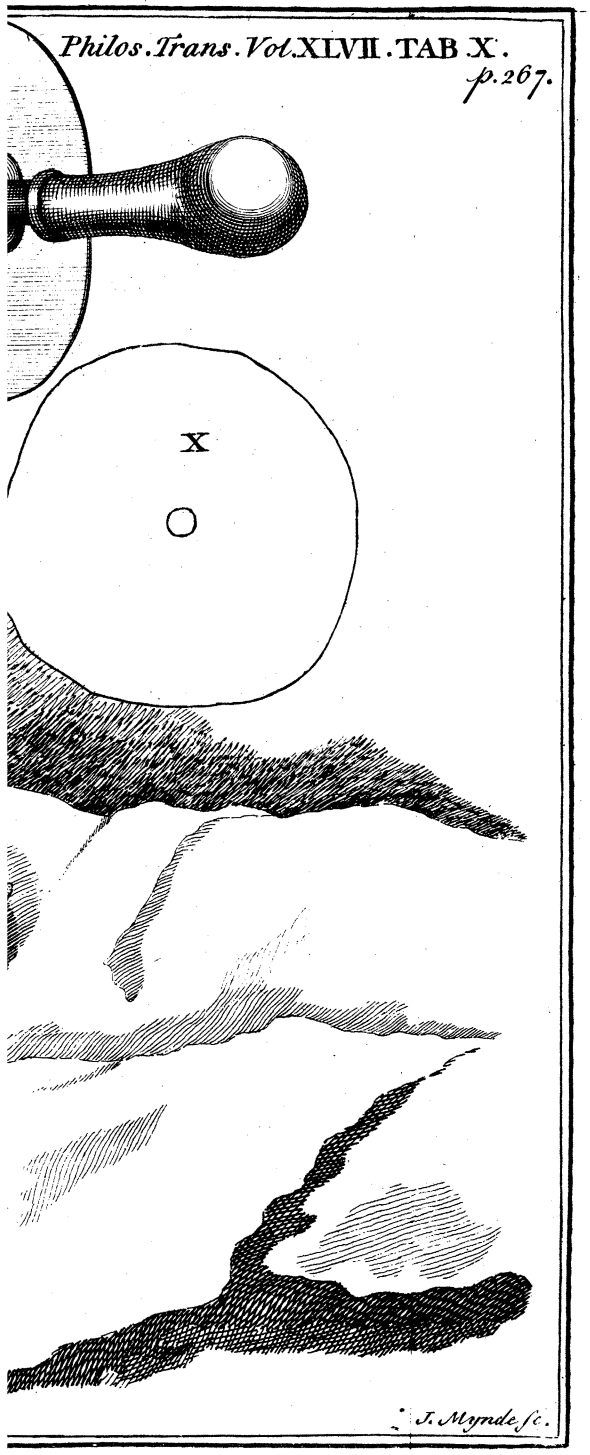
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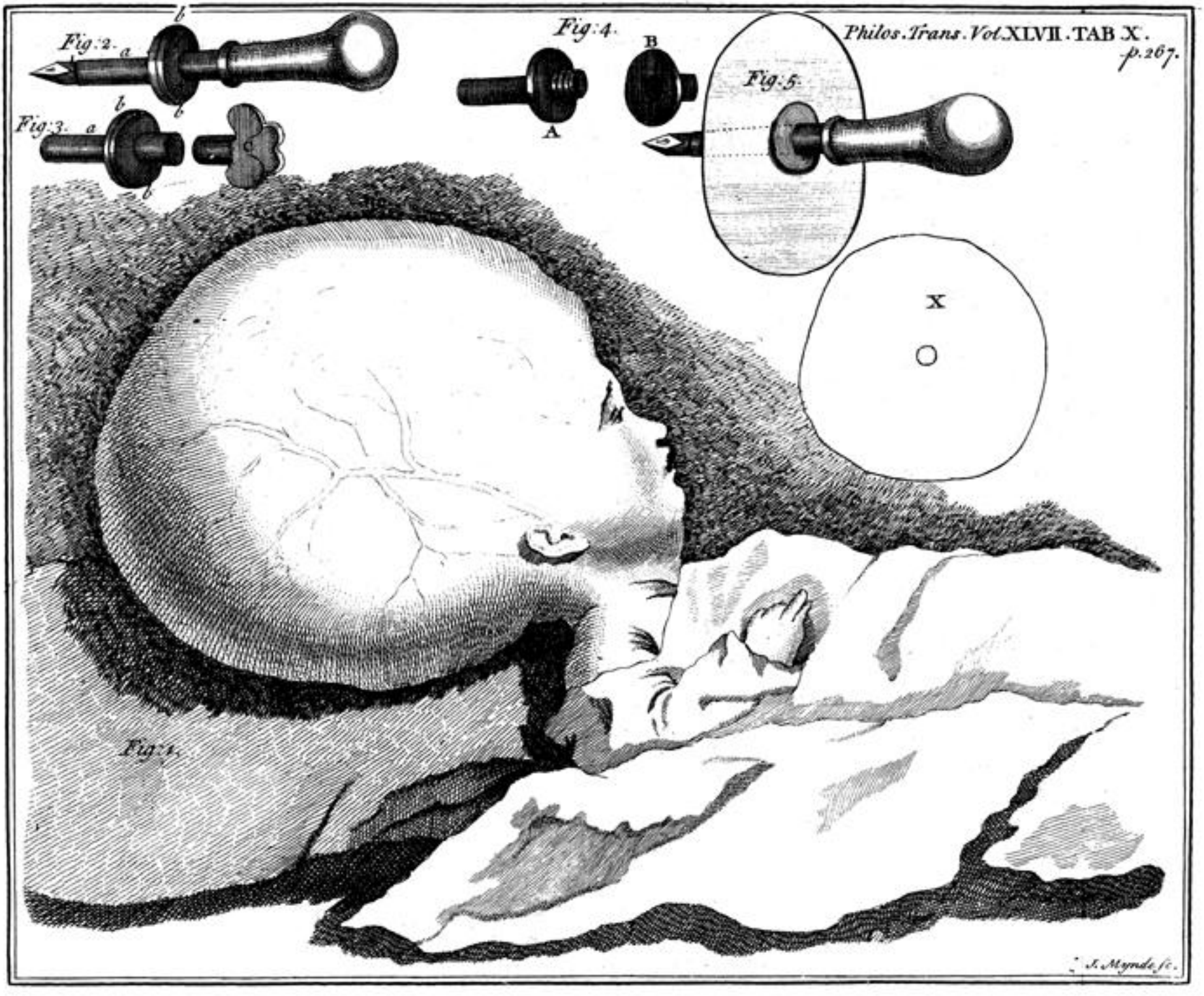
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